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## THE MOST ANCIENT EVIDENCES OF DISEASE AMONG SOUTH AMERICAN MAMMALS[1]

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The work of Moodie in recent years has resulted in the recording by himself and others of numerous examples of disease in fossil vertebrates, but apparently none has been described among South American mammals previous to the Santa Cruz (Miocene). The three pathological specimens here briefly described are thus worthy of record, especially as one is of particularly unusual and interesting character.

### MANDIBULAR NECROSIS IN *RHYPHODON*

In the La Plata Museum (Argentina) there is a pathological lower jaw catalogued as No. 12–1717 with the type skull of *Rhyphodon lankesteri* Roth and essentially a cotype of that species although probably not of the same individual as the skull. It was recorded by Roth as from the Cretaceous of Lago Musters, which probably means that it is from the *Astraponotus* beds near the place now called Pajarito, on the west side of the Cerro del Humo, in central Patagonia.

The necrosis affects the lower border and inner surface of the right ramus of the mandible from below $M_2$ to the posterior end of the symphysis. The whole lower border is here thickened to about one and one-half times its normal thickness and the surface of the bone above this is much roughened and shows two definite necrotic sinuses. Just below the posterior end of $P_4$ and anterior end of $M_1$ is a shallow, irregular pit about 17.5 mm. in diameter and with slightly raised edges. At its lower side, near the middle of the jaw, is the funnel-shaped opening of a passage running straight down into the interior of the diseased part of the jaw. A similar opening occurs near the alveolar border at the anterior root of $P_4$, this root being partly exposed by absorption of the bone. The right $P_3$ is missing and apparently was lost during life, perhaps as a result of alveolar osteitis, although the dental border is not here otherwise strongly affected by the infection. $P_4$ is much more deeply and irregularly worn on this side than on the other, probably as a result of malocclusion following the loss of $P_3$ and only indirectly due to the pathological condition.

[1]Publications of the Scarritt Patagonian Expedition, No. 4.

The outer side of this ramus and all of the symphysis and of the other ramus are quite normal.

The case is clearly one of extensive chronic infection. The history of the necrosis is, of course, conjectural. It is very unlikely that it followed an injury, because of the localization of the infection on the inner side of the jaw and the lack of any direct evidence of such injury. It is quite possible that the disease set in as alveolar osteitis and that infection then spread along the inner surface of the jaw and to its lower border.

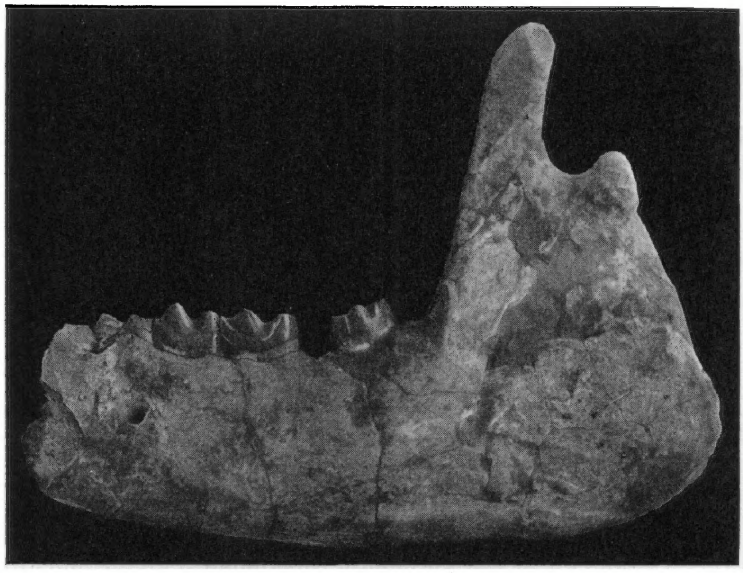

Fig. 1. *Rhyphodon lankesteri* Roth. Cotype, Museo de La Plata No. 12–1717. Internal view of right lower jaw.

Note two necrotic sinuses, roughened surface, absence of $P_3$, and malocclusion of $P_4$. The breakage of $M_3$ is postmortem. Photograph by Dr. Angel Cabrera, retouched, one-half natural size.

## TWO CASES OF SPONDYLITIS DEFORMANS

Moodie has shown that lesions best classified as the results of spondylitis deformans are among the commonest evidences of disease among fossil vertebrates. The Scarritt Patagonian Expedition found two specimens of Eocene age which show typical conditions of this nature. Both specimens are from the *Notostylops* beds, Amer. Mus. No. 28446 an isolated specimen probably of *Thomashuxleya* sp. from Cañadón Hondo, east of the Río Chico near Paso Niemann, and Amer. Mus. No. 28447 associated with a skull of *Thomashuxleya* from Cañadón Vaca, west of the Río Chico near Paso Niemann.

The pathological vertebra of Amer. Mus. No. 28447 is a single dorsal. Its articular faces and neural arch are apparently normal, but the lateral and ventral surfaces of the centrum show lesions closely similar to those

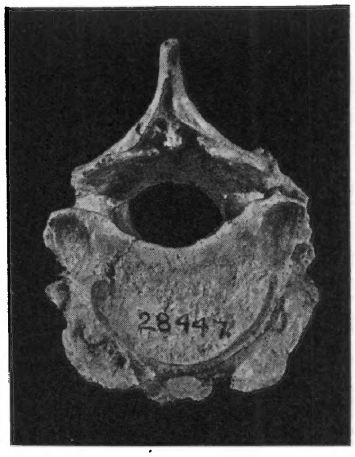


Fig. 2.—*Thomashuxleya* sp. Amer. Mus. No. 28447, diseased dorsal vertebra. Posterior view. Two-thirds natural size.

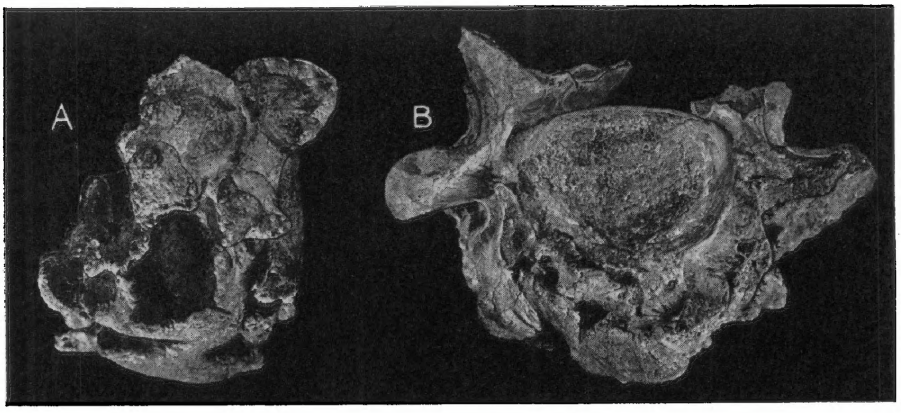


Fig. 3. *Thomashuxleya* sp. Amer. Mus. No. 28446, two coalesced diseased vertebræ.

A, right lateral view, showing deep, lipped capitular facet, fused zygapophyses, etc. B, anterior view, showing strong ventral exostosis. Two-thirds natural size.

of spondylitis deformans in man and other vertebrates. The exostosis is rather symmetrically developed. On each side the diameter of the centrum is increased by about 5 mm. minimum, and wing-like or lipping

processes extend outward along the anterior and posterior margins, but not in such a way as to clasp the adjoining centra. The space between these on the ventral surface, about 15 mm., is nearly normal posteriorly, but anteriorly there is a strong, blunt process imperfectly differentiated from the more wing-like processes on each side of it. Marked as it is, the lesion is not one which would in itself seriously impede the mechanical operation of the vertebral column, although of course the general pathological conditon accompanying it probably did so.

Amer. Mus. No. 28446 is a much more advanced and very severe case. The specimen consists of two dorsal vertebræ which are completely fused. Except in the floor of the neural canal, even the line of junction of the centra is obliterated, and the zygapophyses and base (at least) of the neural arches are also fusing, although not yet perfectly united when the animal died. The notch for the exit of the spinal nerve between the two vertebræ has been converted into a closed canal. The centra are surrounded by a large exostosis, extending in places over 15 mm. beyond the original surface, and very irregular in form. On the lower part there are large, irregular, blunt masses of bone with necrotic sinuses, and there are partly separate lipping extensions around the free articular surfaces, which were not definitely tending to fuse but on which movement must already have been much limited by these processes. Bony lips also surround the capitular facets, converting them into deep pits and apparently much impeding the motion of the corresponding ribs.